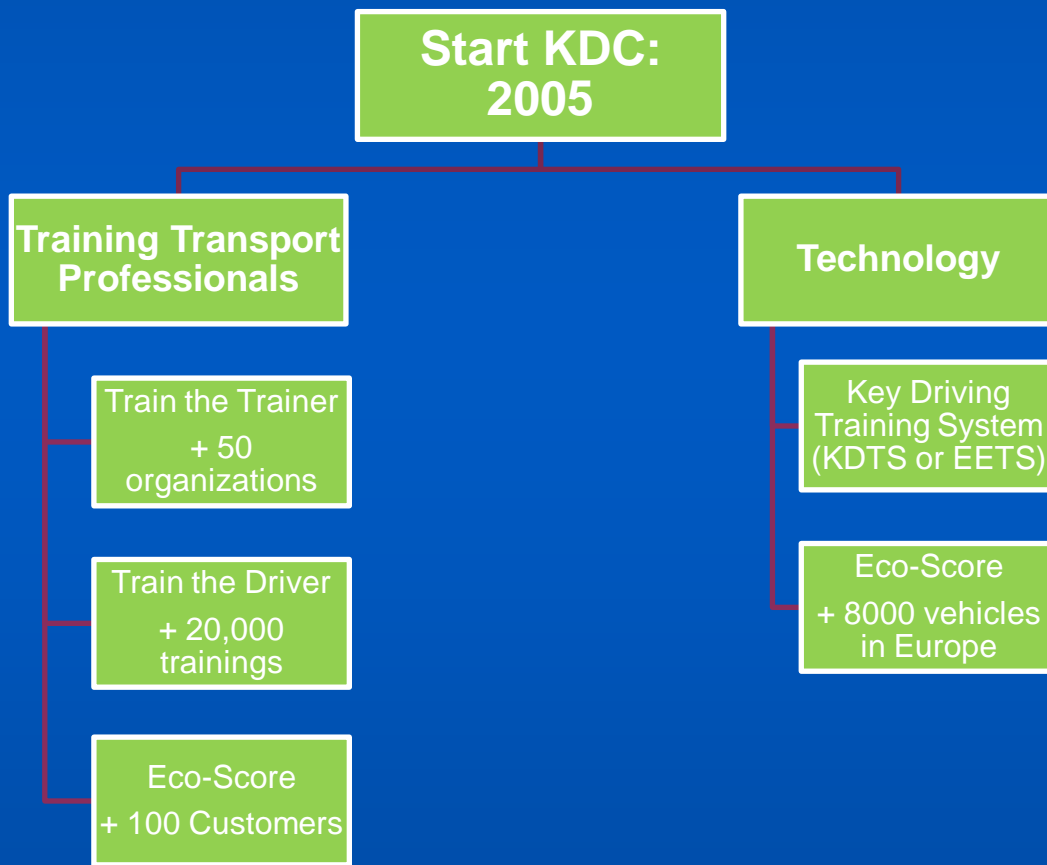


# Monitoring results for ensuring real behavioral changes

Doha, 24 October 2013

*Mr. Kris Jooris*  
*Key Driving Competences, Belgium*

# Key Driving Competences



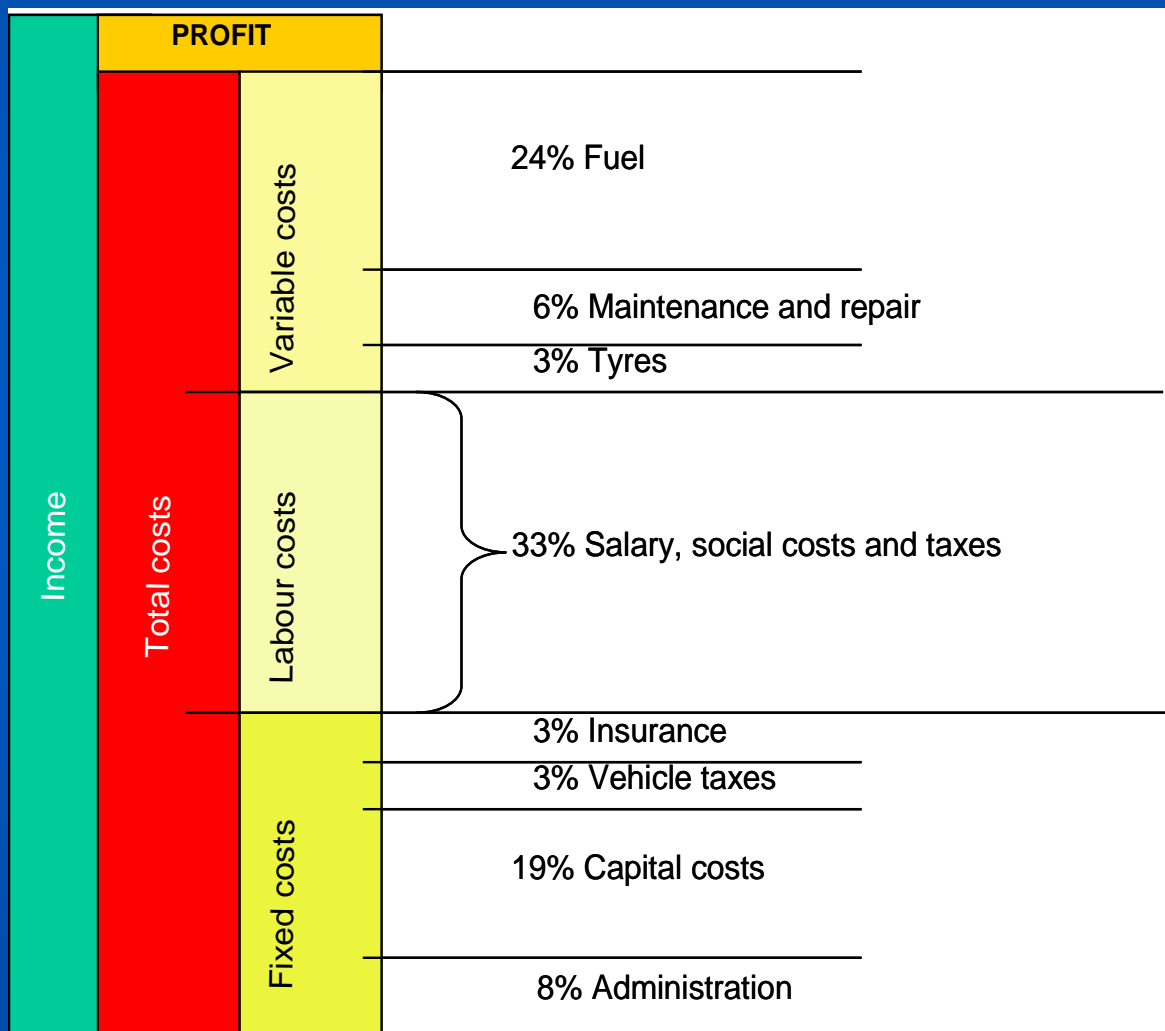
# Benefits

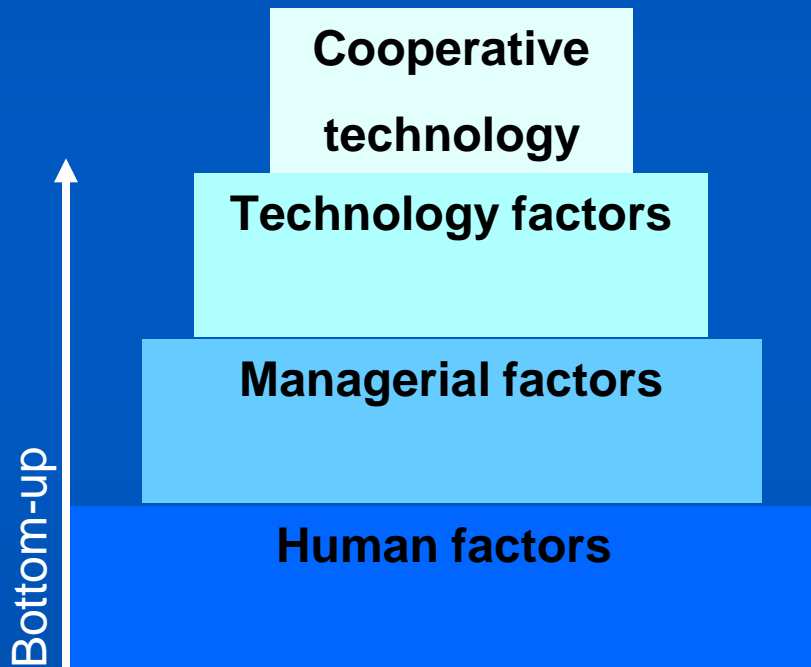


- Less fuel consumption
- Less CO<sub>2</sub>
- Less goods damages
- Fewer accidents
- Lower maintenance costs
- Higher road safety
- Better producing and more aware drivers



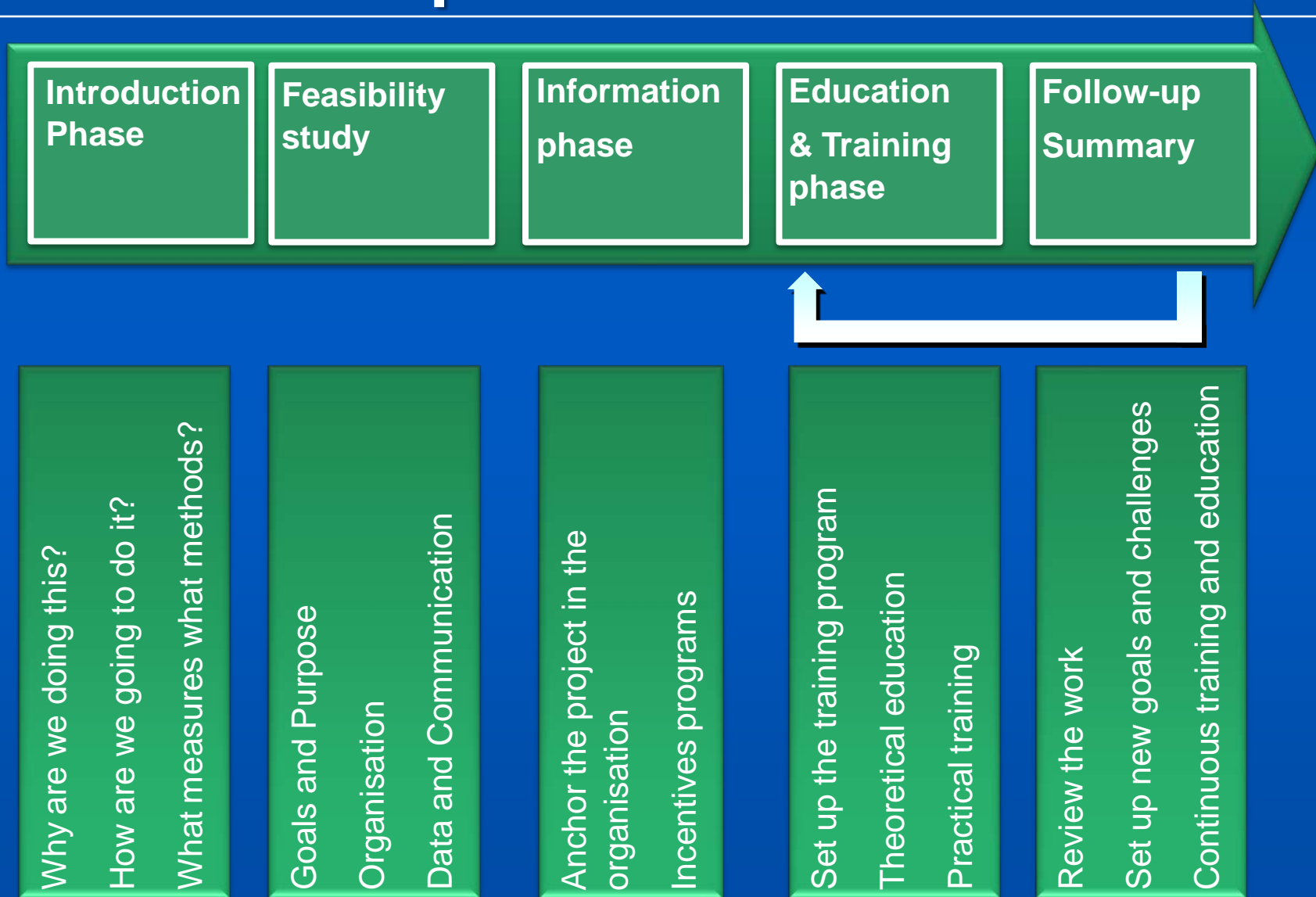
# Cost Structure in most regions & countries





- **Cooperative technology:** Means to integrate several different system with each other. They compile data and give direct feedback to drivers and back office.
- **Technology factors:** Means to support the training and improve the results.
- **Managerial factors:** how the work (of change) is managed in terms of goals, roles, responsibilities, incentives, resources, budget, process etc.
- **Human factors:** Understanding peoples' resources and capacities, i.e. physical, mental, cognitive and behavioural properties. These factors are the basic prerequisites for the training strategies.

# Implementation process



Vision + Skills + Incentives + Resources + Action plan = Change

+ Skills + Incentives + Resources + Action plan = Confusion

Vision + Incentives + Resources + Action plan = Anxiety

Vision + Skills + Resources + Action plan = Resistance

Vision + Skills + Incentives + Action plan = Frustration

Vision + Skills + Incentives + Resources = Treadmill



# ECOeffect Package

- Training methodology for TTT and EDP training
- Licensing EETS as training tool to ECOeffect partners
- Follow-up on quality of trainings delivered





# Our offer – TTT



## ECOeffect Train-the-Trainer:

- 3 day Course
- 1 to 3 Participants
- Training on customer's truck (Can-bus enabled)
- Training at customer's premises
- Free use of EETS software during the ECOeffect project
- ECOeffect Trainer Certificate

# Our offer – EDP



## ECOeffect Driver Program:

- 1 day Course
- 2 to 4 Participants
- Training on customer's truck (Can-bus enabled)
- Training at customer's premises
- Use of EETS software during the training
- ECOeffect Driver Certificate

# EETS System



RPM  
diagram

Speed

Accelerati-  
on

Fuel  
consumption

Fuel  
consumption

Gear

Accelerator

Speed

Driver's name

Green zone

# stops

# braking

Signals are taken from can bus on high frequency

## REPORTING on training results with EETS

For Quality Assurance on the deployment of ECOeffect trainings: ALL training trips registered with EETS are stored on KDC server after replication by training company or internal fleet trainer



## ECOeffect main principles on eco-driving:

- Anticipation look further and wider.
- Drive fluently, avoid unnecessary braking's and stops
- Drive at a constant speed in the highest possible gear





# Individual training report

## EETS TRAINING SYSTEM

### Eco-Proactive Driving Behaviour "What You Can't Measure, You Can't Manage"

RESULTS					
		TRIP 1	TRIP 2	Difference	%
Elapsed Time	mm:ss	39:36	36:04	03:32	8,92%
<b>Average Speed</b>	<b>km/h</b>	<b>34,25</b>	<b>37,53</b>	<b>3,28</b>	<b>9,58%</b>
Total Fuel Consumption	l	11,67	9,21	-2,46	-21,09%
<b>Average Consumption</b>	<b>l/100km</b>	<b>51,6</b>	<b>40,8</b>	<b>-10,8</b>	<b>-20,94%</b>
RESULT ANALYSIS					
Average Position Throttle	%	27%	28%	1%	3,27%
Time vehicle in motion - Zero Throttle	mm:ss	08:42	10:24	01:42	19,54%
Time - Use of Breaks	mm:ss	06:12	03:18	02:53	46,65%
<b>Total Distance - Zero Throttle</b>	<b>km</b>	<b>5,37</b>	<b>6,97</b>	<b>1,59</b>	<b>29,59%</b>
Total Distance - Use of Breaks	km	2,60	1,34	-1,26	-48,54%
<b>Number of Brakings</b>	<b>#</b>	<b>54</b>	<b>33</b>	<b>-21</b>	<b>-38,32%</b>
Gear shifts	#	181	123	-58	-32,04%
Gear shifts(upshift)	#	116	72	-44	-37,93%

Full release  
accelerator pedal

Lower # of brakings

# Training results HSF Poland



## TRIP 1 Average consumption

32,9 L/100 km

(deviation between 23,8 and 55L / 100km)

## TRIP 2 Average consumption

28,9 L/100 km

(deviation between 22,6 and 45L / 100km)

Average reduction in consumption (L /100km) = - 4 L/100km

Average reduction in fuel consumption during training



**-12,24%**

Number of drivers trained: 670 drivers trained

Accomplished by: HSF Logistics and Vive Transport

Training results from May 2011 to August 2013 (14 months)

Training performed by 20 ECOeffect certified internal trainers, measured with EETS

Training trips: all kind of road circumstances, approx. 35 km



# Training results Romania



## TRIP 1 Average consumption

29,52L / 100

## TRIP 2 Average consumption

26,79L / 100

Average reduction in consumption (L /100km) = - 2,7L / 100 km

Average reduction in fuel consumption during training

Number of drivers trained: more than 700 drivers



**-9,24%**

Accomplished by: Cartrans Preda, Com Divers, Duvenbeck, Hoedlmayr, Holleman, Intl. Lazar Cy, Labirint, Lagermax, Logistics RO Tir, Vectra Intl, Willi Betz

Training results from May 2011 to August 2013 (15 months)

Training performed by certified trainers, at 11 companies, measured with EETS

*\* Not including the results obtained at Cartrans Preda and Essers*

# ATM approach

Optimize results... by installing dynamic ATM model in your company

**TX-ECO SCORE**  
SCORE PER DRIVER, MONTHLY REPORT OF 2011Apr

DRIVER	SCORE	DRIVING STYLE ASPECTS
Chauffeur		
AHMED Pascal (AHMEDP)	88	A+ C - A+ F B
RAVARO Veronique (AVI_45)	75	C C C A D A
PROIA Pascal (AVI03_2)	63	B C - A B A
ROGIER Nicolas (AVI03_4)	56	B C - A B A
VYRONNET Nicolas (AVI03_8)	38	D C - A+ C A
VANNINI Jean-Luc (AVI03_27)	25	D C - A B A
BOTTEREL Franck (AVI02_1)	13	B C C A E A
BOHNY Roland (AVI02_2)	8	B C B A C A
LE LAY Mickael (AVI02_3)		D E B - B
HERVEL Gilbert (AVI02_4)		B C - A E A
BERNARD Gilles (AVI04_1)		D C - A E A
BAUDET Gilbert (AVI04_2)		B C - A+ B A
PELLERIN Luc (AVI04_3)		B C - A C A+
GRELAUME Georges (AVI04_4)		B C - A C A
LE GARREC Jean-François (AVI04_5)		A C - A C A+
LE GOUESTRE Christophe (AVI04_6)		B C - A C A+
ENET Eric (AVI04_7)		D C - A D B
SARANGER Alan (SARANGERA)		A C A A+ B A
BORDET Rémy (BORDETR)		D E A+ F A
BORIE Ludovic (BORIEL)		B C B A+ E A

Assessment

Good driving  
Practices

Monitoring

Training



**eco effect**

Nejucelenejší evropský...  
v oblasti Eco-Drivingu

**Login**

Username:

Password:

**Submit**

Powered by [www.slovakia-eco-driving.com](http://www.slovakia-eco-driving.com)

# Monitoring

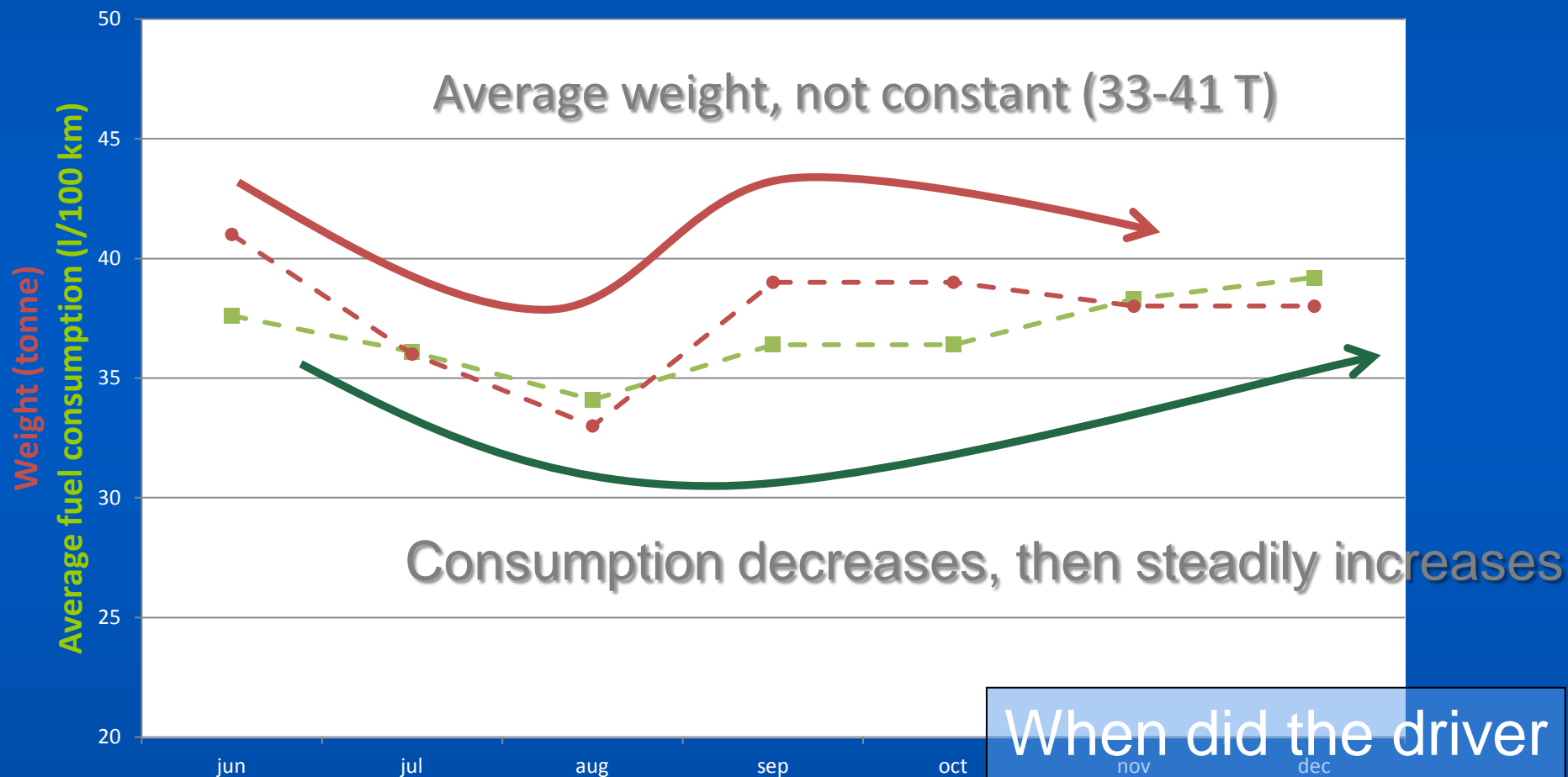


Follow-up of drivers' performance results on a **permanent** basis:

- Analysis of reduction in fuel consumption in relation to situation prior to training:
  - For the whole group of trained drivers
  - For each individual driver
- Monthly feedback to trained drivers
- Quarterly analysis of “corrective actions”:
  - Who needs corrective actions
  - What type of corrective actions
  - Who will undertake these actions
- Continued Follow-Up after corrective actions



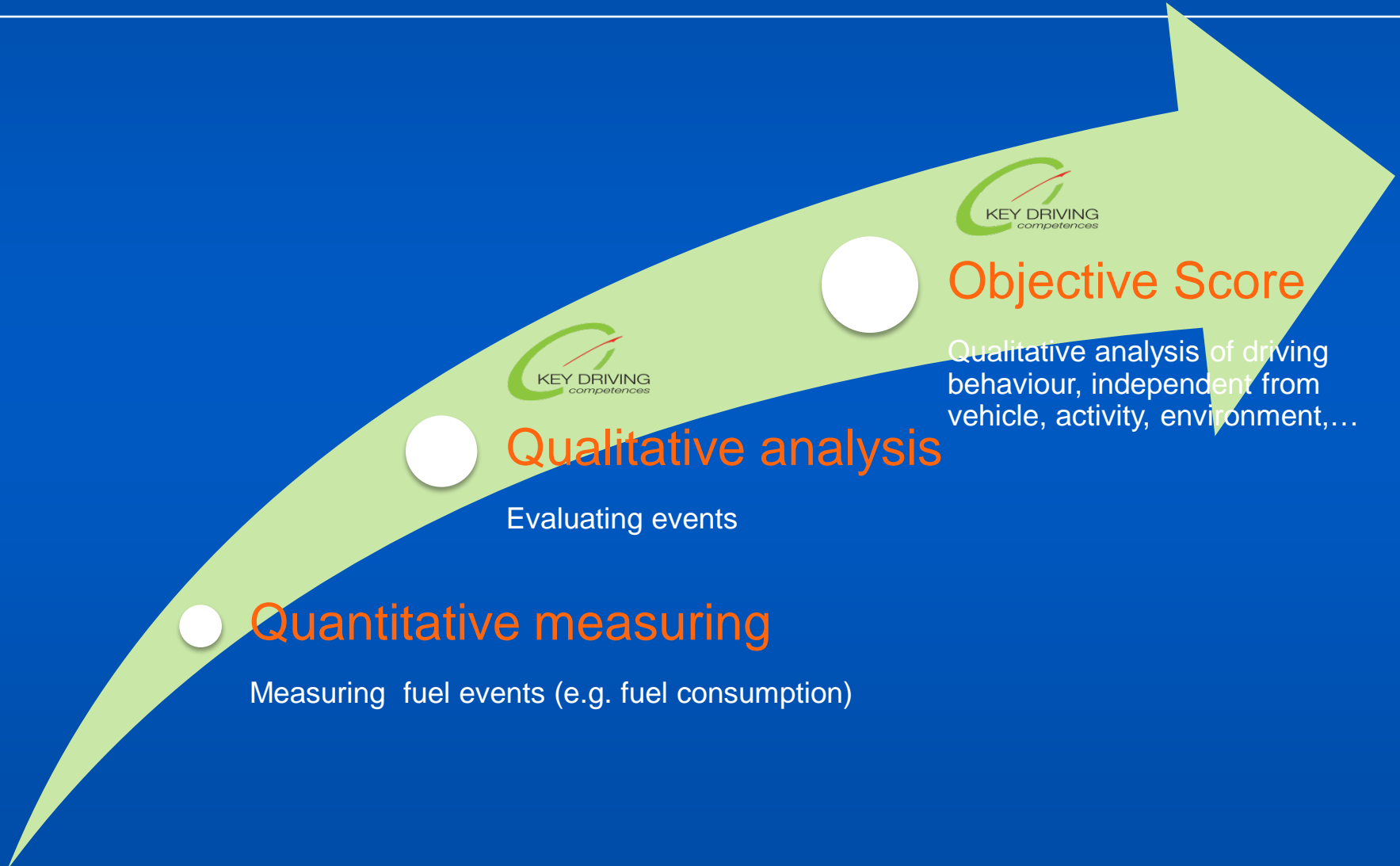
# Why measure driver performance ?



When did the driver perform well?



# How to measure driving behaviour?



# Qua**N**titative vs Qua**L**itative



## Qua**N**titative

- ✓ Statistics of vehicle metrics are not directly related to driver performance
- ✓ Difficult interpretation: very detailed knowledge of external conditions is needed
- ✓ External conditions are changing from day to day, trip to trip, ...

## Qua**L**itative

- ✓ Evaluate the actions made by the driver
- ✓ Fuel consumption is not an input for the scoring
- ✓ A good driver score will lead to a low fuel consumption
- ✓ Ready to use for permanent evaluation and leader boards on driver competences



# EcoScore by KDC



EcoScore = objective evaluation of driver skills based on driver's event queues while driving

SCORE PER DRIVER: MONTHLY REPORT OF 2013/Mar

A+	A	B	C	D	E	F	-
88	75	63	50	38	25	13	0

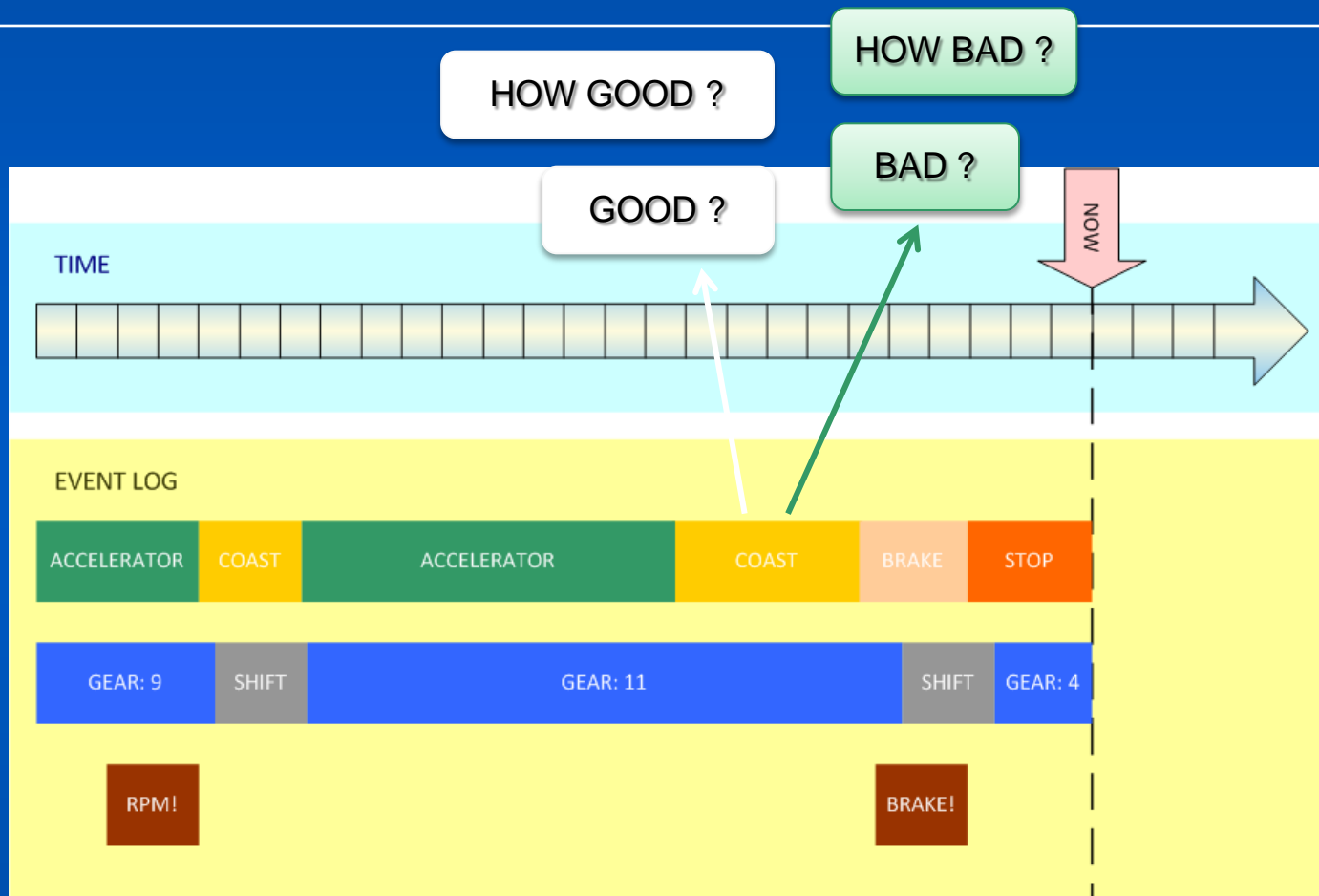
		DRIVING-STYLE ASPECTS				
		TOTAL SCORE	ANTICIPATION	GEARING	IDLING	TECHNOLOGY
						ACCELERATION
Driver						
<a href="#">A A (4318)</a>		47	35	56	100	56
<a href="#">A J (26538)</a>		53	44	54	92	64
<a href="#">A S (1003)</a>		49	33	64	90	57
<a href="#">A R (12004)</a>		37	28	36	95	37
<a href="#">A R (552891)</a>		51	29	69	100	70
<a href="#">A R (920210)</a>		51	38	62	92	55
<a href="#">A A (26104)</a>		52	30	72	89	68
<a href="#">B A (920826)</a>		40	32	40	54	87
<a href="#">B A (1005)</a>		52	34	77	40	81
<a href="#">B M (0343)</a>		44	23	59	99	67
<a href="#">B M (4153)</a>		43	30	50	93	54
<a href="#">B R (920979)</a>		44	36	45	85	55
FLEET AVERAGE		43	31	43	85	54

In order to improve on specific driving skills, subscores are available for:

- Anticipation
- Gearing
- Acceleration
- Idling
- Technology

Total score is weighted sum of subscores : Anticipation (1/3), Gearing (1/3), Acceleration (1/6), Idling (1/12) and Technology (1/12).

# Event Based Scoring





**ECOeffect**  
 www.iru.org  
**IRU Academy** Certified Eco-driving Training Programme

Home Library » Events » Partners Links

ECOeffect Benefits  
 ECOeffect Package  
 Who can apply?

supported by  
 INTELLIGENT ENERGY EUROPE  
 FOR A SUSTAINABLE FUTURE

## What is ECOeffect?

ECOeffect is a high-quality eco-driving programme combining the latest technology, advanced training techniques and safety behaviour specifically designed for the road transport sector. This programme includes techniques, training and monitoring tools for the most efficient fuel cost reduction across Europe. It provides knowledge and expertise to any transport operator and training centre interested in eco-driving. With the support of the European Commission it helps to promote the integration of an eco-driving training module into professional driver qualification and certification.

The ECOeffect programme aims to transfer knowledge from approved a using the ECOeffect Training System (EETS) the trainers will be able to the driving skills of each professional driver. The training will reinforce environmentally aware and economical driving behaviour.




Quantitative  
 evaluation

Europe's most comprehensive Eco-Driving training programme

**Login**

Username:

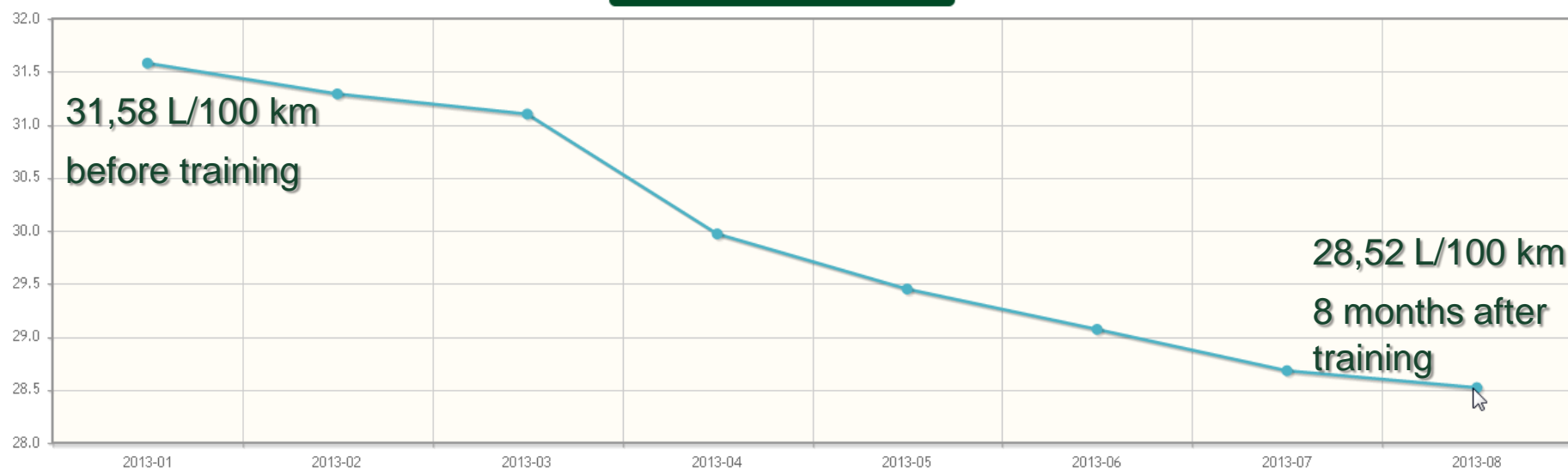
Password:

**Submit**

Support: [sets.support@keydriving.com](mailto:sets.support@keydriving.com)

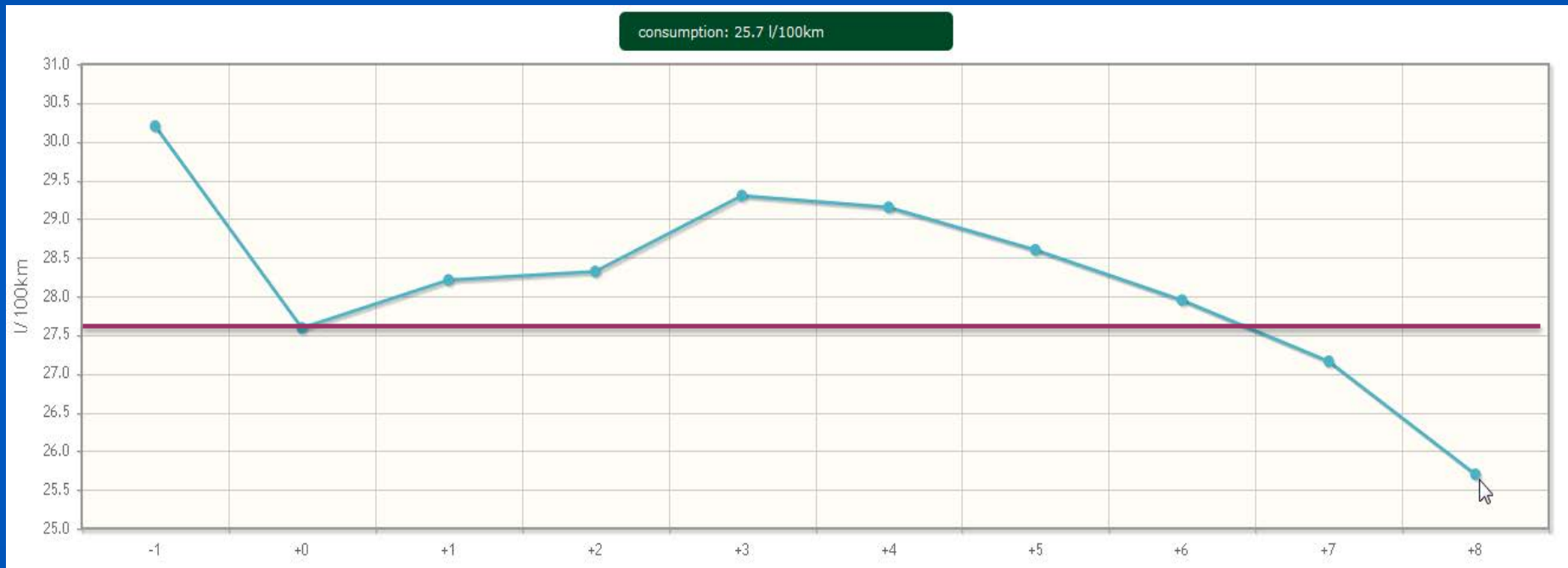
# HSF Poland longer term results

consumption: 28.52 l/100km



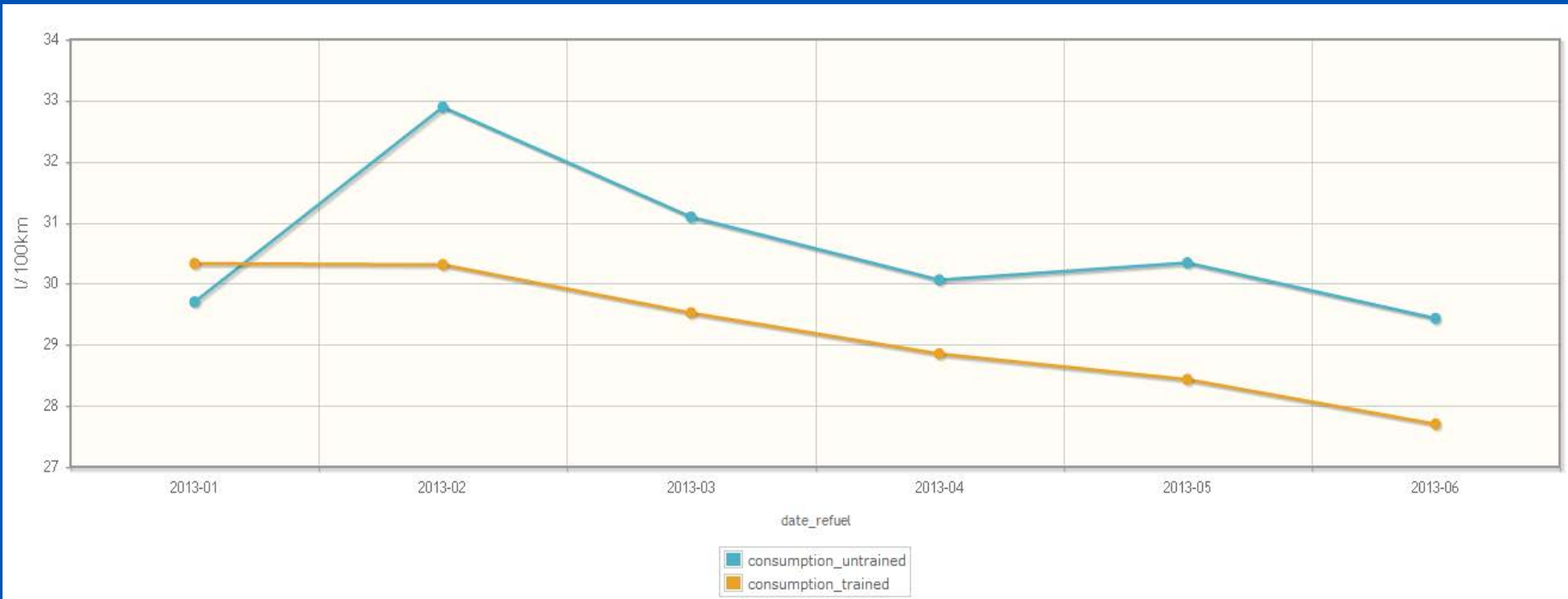
- ✓ Level of fuel consumption is significantly lower than before training in ECOeffect project: -10% after 8 months of follow-up, ie. -3L/100 km
- ✓ Seasonal trend in fuel consumption – impact of changing weather conditions

# Duvenbeck ROU longer term results



- ✓ Long term downward trend in fuel consumption : 7% savings , measured 8 months after the start Ecoeffect project
- ✓ Seasonal trend in fuel consumption – impact of changing weather conditions
- ✓ Current level of fuel consumption significantly lower than before training : savings up to – 1,8L/100 km

# Training: Impact on consumption



A significant difference between the monthly consumption of the drivers trained (yellow line) versus the drivers untrained (blue line) :  
-4.5% savings on fuel consumption for 6 month

# Meeting expectations ...

Performance indicators	units	Achieved
Fuel consumption before training	L/100 km	30,23 L/100 km
<b>Fuel savings</b>	<b>%</b>	<b>6,9%</b>
Fuel price	€	1,2 €
Carbon emission	kg CO2/ liter	2,64
Average driving capacity	Km/driver/year	96.525 km
Fuel savings for 1 driver	€ /driver/year	2.416 €
CO2 savings for 1 driver	kg CO2/year	5.315 kg
CO2 savings per kilometer	g CO2/km	55,06 g/km
Number drivers trained		1.400
Fuel savings all trained drivers	€ /year	3.382.111€
CO2 savings all trained drivers	tons/year	7.441 tons



# Less damages to vehicles



*Also, it should be mentioned that the truck damage rate since applying the trainings is by 1/3 lower than before educating the drivers, among others in eco-driving.*

# Thank you !

*Working together  
for a better future*



*s i n c e      1 9 4 8*